CLOSING OF THE NASA ELECTRONICS RESEARCH CENTER
A STUDY OF THE REALLOCATION OF SPACE PROGRAM TALENT

by

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ABSTRACT

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Submitted to the Alfred P. Sloan School of Management on May 21, 1970, in partial fulfillment of the requirements for the degree of Master of Science in Management.

Four-hundred and thirty-six scientists and engineers employed by the Electronics Research Center of the National Aeronautics and Space Administration were displaced by the closing of the Center, located in Cambridge, Massachusetts, on July 1, 1970. The attitudes and behavior of these aerospace professionals were studied during a period of four months, during which time they were actively searching for new employment and the Center was being reestablished with a new role in the transportation field.

Management of the Center provided a wide range of services to aid the employees in their job search. These services, which assisted employees in making contacts with employers outside as well as inside the federal government, are discussed and evaluated for the benefit of other organizations involved in a layoff of high-technology personnel. A technique for rapid distribution of employee characteristics which is also useful for job market survey is described.

Profiles of the employees educational, job classification, salary and age characteristics are supplied and these characteristics are used to compare employment success. Fields of education and specialization in which employment difficulties were found are delineated. The impact of age, experience, salary and degree attainment on employment success are evaluated.

A brief description is given of the successor organization, the Transportation Systems Center of the United States Department of Transportation, and of the employees absorbed by that establishment. Comparisons are made of the two-hundred and ten professional employees offered employment in the new Center and the employees who had found other employment or were still looking at the end of the study.

Thesis Supervisor: Donald G. Marquis

Title: Professor of Management

The useful suggestions, criticism and abiding patience of the members of my Thesis Committee, Professors Donald G. Marquis and D. Quinn Mills, are sincerely acknowledged. The interest shown by Professor Charles A. Myers and other members of the faculty is also appreciated.

I wish to thank the Personnel Officer of the Electronics Research Center, Mr. John P. McLaughlin, and his entire staff for their splendid cooperation and assistance during the period of my research

Special thanks go to Mr. Robert T. O'Neil, Head of the ERC Outplacement Team, for his acceptance of this ad hoc member of his team, the use of his office and other team members during the study, his intimate knowledge of the employees of the Center, and his cooperation in the development of questionnaires and forms which provided the data upon which this disertation is based.

Miss Mary E. Noble and Mrs. Frances O. Tracy, of the Interview Center, rendered valuable assistance in keeping the myriad records of that activity and preparing and distributing questionnaires.

Mrs. Patricia R. Shea, Mr. Ernest E. Gaiser, and Miss Ann Wolff, who worked in the Information Center, were very cooperative in recording the results of the many contacts made with prospective employers.

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CHAPTER I

INTRODUCTION

On December 29, 1969, the Administrator of the National Aeronautics and Space Administration, Dr. Thomas O. Paine, visited the NASA Electronics Research Center in Cambridge, Massachusetts. Dr. Paine met with the employees of the Center to announce that, because of changes in NASA priorities, the Center was to be closed.[1] The meeting was held in the newly-occupied Auditorium Building, the first of a complex of new facilities being constructed for the Center which was ready for use.

On January 8, 1970, the employees of the Center, numbering approximately 900, were notified that they would be separated from service with the National Aeronautics and Space Administration at the close of business on June 30, 1970, the date set for closing of the Center.[2] The notice of reduction in force indicated that if any of the functions of the Center were transferred to another NASA activity or any other federal agency, employees identified with such transferred functions would be offered an opportunity to accompany the function.

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[1]Robert Creamer, "NASA Center to Close in '70", Boston Herald Traveler, December 30, 1969, p. 1.

[2]James C. Elms, Director, Electronics Research Center, "Reduction in Force Notice", letter to employees, January 8, 1970.

This study was proposed to provide information on a topic of current interest; the reallocation of scientific and engineering personnel as they are displaced from government-supported aerospace programs. Almost one-half of the employees, 436 in number, were classified as scientists and engineers, and it is this group which provided the data upon which this study is based.

The object of the study is to determine the impact of the closing on the individual aerospace professional. The adaptability of employees in various job classification categories and with a wide range of educational and experience levels to find employment in and out of the aerospace field was of primary interest. Fulfillment of the desires of the employees regarding geographical location, employment field, and income maintenance were also of interest. Finally, the techniques used, and the employees ratings of these techniques, in the search for new positions were surveyed to provide guidance for others in similar situations.

Because the closing was announced during a period when public support of aerospace goals was declining, it was believed that a study of this nature would provide information on the adaptability of professionals in that field to transfer their skills into new areas. The NASA has long held that much of the aerospace technology developed in its programs is adaptable to other fields. If that hypothesis is true, the employees involved in the production of advances

in the state-of-art should be in demand in other fields. The more basic research conducted as a prelude to application in aerospace programs should have even more general adaptability to a number of fields, thus it was assumed that the scientists would have more opportunity to carry on basic work under other sponsorship than engineers involved in applications.

During the period from January 8, to May 11, 1970, the job search activities of the employees were observed through access to records of the personnel office at the Center and discussions with employees of the Center and employers holding placement interviews at the Center. Information on educational background, job description, salary, and experience was made available from records. Several questionnaires were used to determine preferences for new jobs and locations, search techniques, and other information not available from the personnel records.

One event had a major impact on the study. After a long period of speculation by employees, based on newspaper reports and rumor, the Secretary of the United States Department of Transportation, John A. Volpe, visited the Center and announced that the facility and a majority of its employees would be taken over by his organization.[3] The transfer was announced to be effective on July 1, 1970,

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[3]A. S. Plotkin, "Cambridge Center Shifting Research to Transportation", The Boston Globe, March 26, 1970, p. 1.

the day after the formal closing of the Center by the NASA. The basis for this action by the Department of Transportation (DOT) lay in the need for advanced development support of national transportation goals, the availability of the Center, and the applicability of some of the work being conducted to transportation programs. Almost one-half of the professional employees being studied were invited to apply for transfer to the new organization.

CHAPTER II

STUDY METHODS

The location of the Electronics Research Center (ERC) near the campus of the Massachusetts Institute of Technology made it possible to observe first-hand the activity described in this study. With the full cooperation of the Center's personnel office, the author was provided with office space, clerical assistance, and access to records.

The first survey of employee attitudes was made through a questionnaire distributed to every eigth person on an alphabetical employment roster effective December 31, 1969. The questionnaire is exhibited in Appendix A. Distribution was made on January 22, 1970, and the return percentage was approximately 30 percent. Analysis of the returns is made in Chapter VI.

On January 6, 1970, the Personnel Officer had distributed a memorandum to all employees announcing the institution of an outplacement program.[4] Employees desiring to participate were requested to submit an "Interest and Experience Statement", or short resume, on the form reproduced in Appendix B. This statement, which was eventually submitted by over 70 percent of the employees, indicated their geographical preference, preference for non-federal

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[4]John P. McLaughlin, "Job Placement Program", ERC Announcement 70-77, January 6, 1970.

or federal employment, and through its submission, indicated that the employee was actively searching for employment through the auspices of the Center-sponsored placement activity. Discussion of the use of information supplied on this statement is found in Chapters V and VI.

A number of organizations expressed interest in hiring the employees to be displaced by the Center closing. An information center was established in the personnel office to handle these inputs. In addition, other organizations were solicited regarding employment opportunities. An interview center was opened to allow interested employers the opportunity to talk with ERC employees at the Center. Complete records were kept so as to identify the organizations holding interviews, and number of employees interviewed. At a later date, the interviewing organizations were queried by mail to determine the results of their meetings. This activity is discussed in Chapter V.

All information regarding employment interviews at ERC was published and distributed to employees. The information was catagorized as being applicable to individuals with: 1) clerical, 2) administrative, or 3) technical backgrounds. The name, location, and contact individual for each organization was listed with brief descriptions of the existing vacancies. More detailed information was held available for reference in the information center. All opportunities were listed, regardless of plans for on-site interviews, and the

employees were encouraged to contact organizations directly. Employers who did not conduct on-site interviews were later contacted regarding the results of the listings and these results are discussed in Chapter V.

The activities of employees who did not file "Interest and Experience Statements" and/or who did not interview at the interview center were surveyed by another questionnaire. (Appendix C) This information indicated the interviewing frequencies both inside and outside of the Center as well as offers received, mail solicitation by employees, and comments on the placement program. Discussion of this data may be found in Chapters V and VI.

A final questionnaire was prepared and given to each employee as part of his clearance procedure as he separated from the Center. (Appendix D) Information regarding job selection, search technique, and employee attitude is discussed in Chapter VI.

Finally, the author spent a great deal of time at the Center in discussions with the employees and in preparation of statistical information included in this study and used by the Center in managing the outplacement activities.

CHAPTER III

THE ELECTRONICS RESEARCH CENTER

During the earliest years of the space program, from 1957 through 1960, there was a growing recognition that electronics capability was one of the major pacing items in the development of the sophisticated systems being planned. In 1961, the Office of Electronics and Control was created in the NASA and assigned the task of coordinating and strengthening the electronics research being carried out. A study of the NASA's electronics capability reached the conclusions that: 1) space needs required increased attention by electronics research organizations throughout the nation, and 2) greater electronics research capability and competence was required within the NASA.

Four alternatives to provide space electronics capability were investigated: 1) more research at existing NASA Centers, 2) concentration of research at one of the existing Centers with major expansion at that site, 3) increased effort at non-NASA installations, and 4) a new Research Center for Electronics. The fourth alternative was selected and, in the budget submitted to the Congress in January 1963, a request for $5,000,000 was made to enable construction of a NASA Electronics Research Center in the Boston area.

Legislation was passed authorizing the establishment of the Center conditional to transmittal to the Congress a study

in detail the geographic location of, the need for, and the nature of, the proposed Center. A report of the study was transmitted to the Congress on January 31, 1964, and provides the basis for comparison of original planning and actual growth of the Center.[5] The Center was officially established in Cambridge on September 1, 1964.

Projected and actual buildup of personnel is compared in Table 1. Funding plans and actual expenditures for facilities are also shown. It is obvious that the Center had sufferred from a stunted growth pattern long before the decision to close was made.

TABLE 1

BUILDUP OF PERSONNEL AND FACILITIES, 1964-1969

Fiscal Year (ends June 30)		1964	1965	1966	1967	1968	1969
Personnel (Number)	Planned	50	250	550	1000	1600	2100
	Actual	33	238	555	791	950	893
Facilities (Millions of Dollars)	Planned	$ 5.0	10.0	19.6	13.9	8.5	-0-
	Actual	$ 2.8	10.5	5.3	7.5	-0-	-0-

The original plans called for about one-third of the staff to be professional scientists and engineers, supported by technical personnel amounting to 43% of the complement,

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[5] "Electronics Research Center, Report of the National Aeronautics and Space Administration", Committee Print, House Committee on Science and Astronautics, U. S. Govt. Printing Office, Washington, D. C., January 31, 1964.

and administrative and general support of 24%. The actual percentages as of December 31, 1969, were 50% professional, 14% technical support, and 36% other support. These figures are close to those proposed for the earlier years of Center growth and reflect the reduced size of the facility in which most of the technical support personnel would have been employed.

Plans for the professional staff called for 54% to be in the fields of Electrical and Electronic Engineering, 32% in Physical and Classical Sciences, and 14% in other fields. Final figures showed only 27% with Electrical and Electronic Engineering degrees, and 47% having degrees in the Sciences, while 26% had degrees in other areas of engineering and in the arts. Advanced degree holders comprised 65% of the staff at closing, a very large increase over the 26% originally anticipated as desirable. These data indicate that considerable changes in the research needs of the NASA occurred as the Center evolved.

The early organization of the Center was horizontal, with ten laboratories, each covering a discipline in electronics.[6] These laboratories each had responsibility for developing ideas and putting them into practice, but had tended to concentrate on the former, which led to the high concentration of scientists. In 1968, the Center was reorganized

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[6] James K. Glassman, "What's at Stake if NASA is Cut", Boston Herald Traveler, December 28, 1969, Sec 1, p. 39.

into three technical directorates which progressed from basic to applied research with some development. (Figure 1) Evidently, during the earlier growth of the Center the bias toward scientific personnel was even stronger, as most of the scientists were assigned to the largest of the directorates, Research.

Table 2 provides a profile of employees by job classification. Of the 436 scientists and engineers on the staff, 418 were classified in the Aerospace Technology field and 18 in supporting areas. Within these classifications, there was a further breakdown into 47 aerospace and 7 supporting areas, the support categories shown at the end on the table. These classifications are provided as they are more descriptive of the work performed than information on educational field.

Distributions of the staff within the organizational divisions by salary, age, education, and experience are provided in Tables 3 through 5. The average age of the professional was 38.1 years, average salary $18,165, and average experience (years since first degree) was 15.1 years. The oldest of the four operating organizations, in terms of both age and experience, was the Administration Directorate, with 67% of the professionals over the average age and experience levels. The youngest organization was the Technical Programs Directorate, with only 36 and 29 percent over the age and experience averages. In terms of salary, the most professional

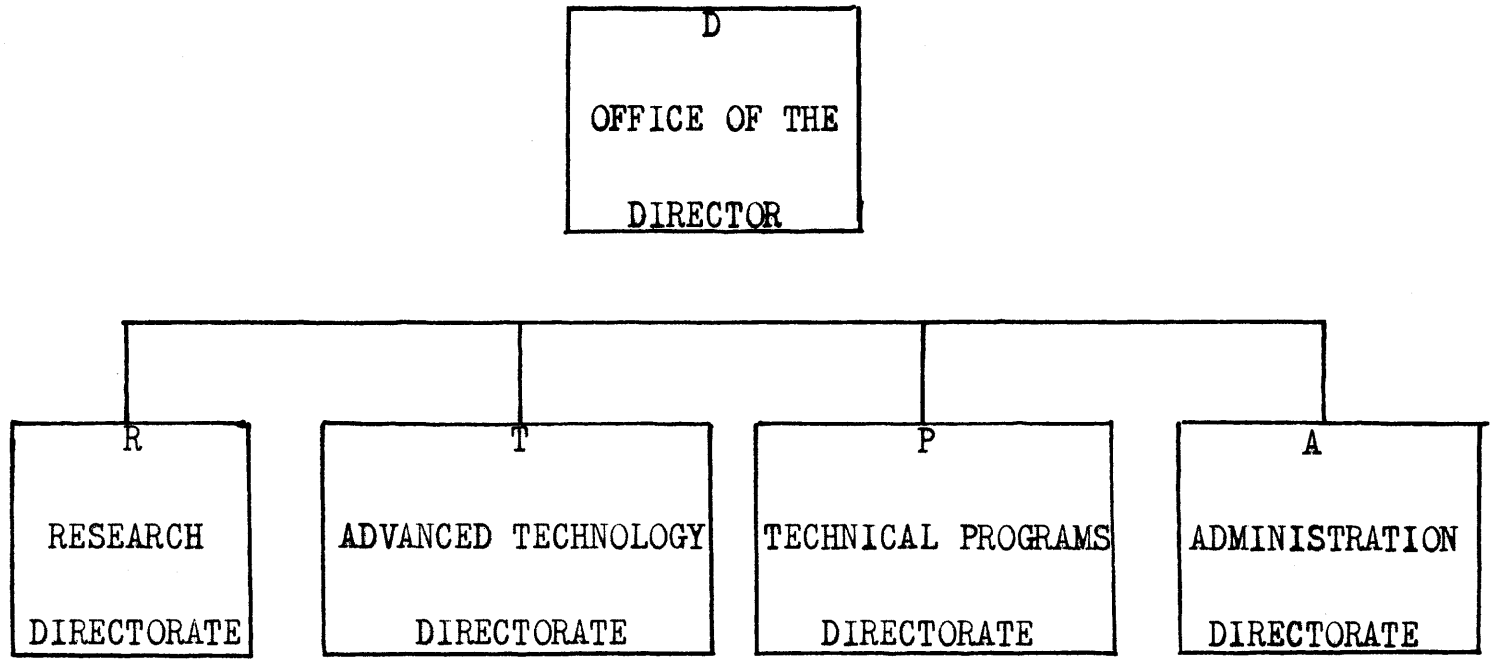

Figure 1. ORGANIZATION OF THE ELECTRONICS RESEARCH CENTER

TABLE 2

CLASSIFICATION OF ERC SCIENTISTS AND ENGINEERS

TITLE	NUMBER OF EMPLOYEES	HIGH SALARY*	LOW SALARY*
Flight Systems	4	27	24
Space Sciences	6	23	15
Aeronomy	1	16	
Ionospheres	1	15	
Fields and Particles	1	21	
Meteoroid Studies	2	16	15
Solar Studies	1	28	
Physiological Studies	4	19	13
Human Performance Studies	2	20	18
Manned Systems Engineering	1	17	
Fluid & Flight Mechanics	2	15	9
Flight Mechanics	6	23	13
Control & Guidance Systems	47	29	11
Magnetofluidynamics	1	17	
Basic Properties of Gases	2	23	19
Materials & Structures	2	24	9
Basic Properties of Materials	55	28	11
Aerospace Polymers	1	23	
Electrical Propulsion & Power	2	19	19
Direct Energy Conversion	8	27	14
Flight Systems	3	25	24
Reliability	4	24	15
Flight Systems Test	1	17	
Quality Assurance	2	20	17
Electrical Systems	8	22	11
Measurement & Instrumentation	47	32	9
Measurement & Inst. Systems	6	19	15
Space Optics	33	26	12
Measurement Standards & Calibration	1	16	
Control Systems	17	30	13
Tracking & Telemetry Systems	7	22	11
Electronics Engineer	8	20	14
Telemetry Systems	1	14	
Telecommunications	2	19	13
Electronics of Materials	11	24	11
Microwave Physics Electronics	23	29	13
Data Systems	36	28	9
Data Analysis	14	22	11
Theoretical Simulation Technology	6	20	13
Data Equipment	11	22	11
Experimental Facilities & Equip.	7	27	17
Experimental Tooling & Equipment	6	20	12

(Table continued on following page)

TABLE 2 (Continued)

CLASSIFICATION OF ERC SCIENTISTS AND ENGINEERS

TITLE	NUMBER OF EMPLOYEES	HIGH SALARY*	LOW SALARY*
Director	1	33	
Project Manager	3	24	20
Technical Management	10	23	14
Technology Utilization	1	21	
General Engineer	1	18	
Safety Engineer	1	16	
Architect	2	18	18
Civil Engineer	4	18	15
Mechanical Engineer	7	21	12
Electrical Engineer	2	18	15
Industrial Engineer	1	17	

*Salary in thousands of dollars

TABLE 3

SALARIES OF ERC SCIENTISTS AND ENGINEERS

ORGANIZATIONAL DIVISION	A	D	P	R	T	ALL
Less than $10,000	-	-	3	1	4	8
$10,000 to 12,000	1	-	2	8	8	19
12,000 to 14,000	4	-	11	12	9	36
14,000 to 16,000	7	-	11	12	20	50
16,000 to 18,000	10	-	27	42	29	108
18,000 to 20,000	9	-	11	17	17	54
20,000 to 22,000	4	1	12	31	17	65
22,000 to 24,000	6	-	7	17	14	44
24,000 to 26,000	1	2	8	14	6	31
More than 26,000	1	2	1	11	6	21

TABLE 4

AGE AND EDUCATION OF SCIENTISTS AND ENGINEERS EMPLOYED AT THE ELECTRONICS RESEARCH CENTER

Organizational Division	A	D	P	R	T	All
Age, in years						
20 - 25	-	-	4	6	11	21
25 - 30	5	-	18	22	18	63
30 - 35	4	-	21	32	18	75
35 - 40	6	1	20	38	29	94
40 - 45	11	1	18	19	20	69
45 - 50	7	-	9	28	15	59
50 - 55	7	1	2	12	10	32
55 - 60	2	-	1	6	8	17
60 - 65	-	1	-	2	-	3
Over 65	1	1	-	-	-	2
Education						
Science	10	3	27	109	65	214
Engineering	25	2	64	54	60	205
Other	8	-	2	2	5	17
Bachelor's Degree	27	1	36	29	52	145
Master's Degree	13	3	48	50	41	155
Doctor's Degree	-	1	8	86	37	132
No Degree	3	-	1	-	-	4
Total Employees in Division	43	5	93	165	130	436

TABLE 5

EXPERIENCE OF SCIENTISTS AND ENGINEERS EMPLOYED AT THE ELECTRONICS RESEARCH CENTER

Organizational Division	A	D	P	R	T	All
Years since Bachelor's Degree						
0 - 5	1	-	9	10	15	35
5 - 10	7	-	23	26	26	82
10 - 15	6	-	30	40	25	101
15 - 20	10	1	15	36	26	88
20 - 25	11	1	10	22	19	63
Over 25	5	3	5	31	19	63
Years of Federal Service						
0 - 3	1	-	15	15	27	58
0 - 5	6	2	39	78	54	169
5 - 10	10	2	34	60	57	163
10 - 15	12	1	13	15	11	52
15 - 20	6	-	5	4	7	22
20 - 25	5	-	1	7	-	13
Over 25	4	-	1	1	1	7
Years of NASA Service						
0 - 5	25	2	70	113	98	308
5 - 10	17	3	20	49	32	121
Over 10	1	-	3	3	-	7

organization, the Research Directorate, enjoyed first place, while the Administrative Directorate was lowest, with only 32 percent of its employees receiving more than the average wage.

The official announcement that the Center was to close was made to the employees on December 29, 1969. Dr. Paine said, "We are being forced to close. . . . We find that we must effect reductions and consolidations across the board if we are to reshape our programs to meet the nation's future needs in aeronautics and space. . . . We are simply faced with the fact that NASA cannot afford to invest broadly in electronics research as we have in the past. . . ."[7, 8] Dr. Paine also noted that efforts would be made to find some other government use for the Center.

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[7]Electronics Research Center News Release 69-26, December 29, 1969.

[8]Creamer, p. 4.

CHAPTER IV

PERSONNEL POLICIES

The official policy regarding layoffs of federal civil service employees is known as "Reduction in Force".[9] Under this policy, the employee has a number of rights. In the case where an installation is being reduced in strength, but not closed, there are procedures which take into account seniority, prior military service, area of work or specialty, and other considerations. In the case of the Electronics Research Center, where no employees were to be retained, certain rights to employment elsewhere in NASA and other federal agencies exist.

Separated employees may register for preferential treatment in the filling of vacancies at other NASA facilities. If openings exist in the employee's classification elsewhere in NASA, he must be given preference over other non-NASA applicants. The employee must register for this consideration and is given preference for up to six months from the date of registration. This register is called the "Stopper List".

Employees may also register for preferential consideration by other agencies through the "Displaced Career Employee" program of the Civil Service Commission.

9"Adjustment of the Workforce", NASA Handbook 3250.2, Washington, D. C., November 1967 (with posted changes)

The minimum notice of separation possible under civil service regulations is thirty days; the maximum, ninety days. To allow employees additional time to avail themselves of Reduction in Force benefits, an exception to the ninety-day limit was made so that notice of separation could be issued on January 9, 1970, rather than April 1.

Severance payments are made to all employees not transferred to other federal positions or eligible for retirement annuities. These payments are made on the basis of length of service and age. One week's pay for each year of service up to ten years, and two week's pay for each year over ten years are given as the basic allowance. For each year the employee is over forty years of age, the basic allowance is increased by five percent. Payments are made at the employee rate of pay in effect at separation at regular pay periods until the allowance is depleted, regardless of employment status unless another federal job is taken. The maximum allowance is one year's pay.

Employees are also eligible for payment for unused vacation at separation and for refunds of their contribution to the federal retirement plan (if desired, funds may be left in the retirement plan and will pay an annuity at a later date)

Under the provisions of the NASA procedures, any employee with five years of civilian federal service is eligible for immediate retirement if he: 1) is age 62 or older,

2) is age 50 or older and has at least 20 years of service, 3) has a total of 25 years of service, including Military service, with no age restriction, or 4) is totally disabled.

Of the 436 professional employees under study, 223 registered for the "Stopper List" within NASA. Only 103 registered for the preferential treatment available through the Civil Service Commission, perhaps because very few employees had long civil service experience records (Table 5) and a number of other federal layoffs were in progress in the local area. Three employees had decided to retire, and only four more were eligible amongst the group that was still looking for employment at the end of the study.

In addition to the regularly proscribed placement preference programs discussed above, the Center personnel office undertook to provide the employees with direct assistance in securing employment outside the federal government. These efforts are described in the following Chapter.

CHAPTER V

THE ERC OUTPLACEMENT PROGRAM

Center employees were invited to participate in an outplacement program sponsored by the Personnel Office. On January 6, 1970, the employees were provided with the "Interest and Experience Statement" exhibited in Appendix B, and were informed of the procedures to be followed in the program.[10] The Personnel Office was to serve as a clearing house for job information in all fields. The statements submitted by employees were filed in an information center for perusal by interested employees. Later in the program, the statements were used to prepare condensed employee descriptions, called "mini-resumes", which were mailed to interested employers. Response to the program was enthusiastic, with thirty percent of the employees submitting statements in the first two weeks. Within a month, over half of the Center's employees had submitted, and a final count showed over seventy percent of the initial group of employees had filed. The professionals under study, as a group, were less active than other employees in their participation, with a final filing percentage of sixty-two percent.

In addition to maintaining information on employee interests and experience, the information center compiled lists

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[10]McLaughlin, ERC Announcement 70-77

of prospective employers with existing vacancies. This effort was initiated in response to the influx of inquiries from a large number of organizations regarding the availability of ERC employees. It grew into a listing service, which published four periodically updated lists of employment opportunities classified as: 1) clerical, 2) administrative, 3) technical, and 4) employment agencies. In the technical area, which included opportunities for non-degree technicians as well as scientists and engineers, the list eventually grew to include over 300 employers.[11] A sample page from the technical list is shown as Appendix E. These lists were distributed and posted on bulletin boards and employees were counseled to make direct contact with the employers listed. No absolute count of employee contacts made through the listings was possible, but most employees indicated that they had been used to provide telephone numbers, names, and addresses for direct, telephone and mail contacts.

Prospective employers were requested to provide more detailed information about vacancies than what was included on the published lists. This information was kept on file in the information center for review by employees. The majority of initial contacts by the information center staff were made by telephone to insure currency of information listed, using the form shown in Appendix F for recording

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[11]Francis H. Huron, "Revised listing of technical positions", ERC Memorandum, February 5, 1970. (with additions)

initial contact data. After the early influx of outside interest in employee availability had died down, the staff began to solicit employers in the local area and large organizations in the electronics field on a nation-wide basis. ERC employees were also requested to provide information to the staff on known vacancies for use by other employees.

In addition to the information center operation discussed above, an interview center was also established. As prospective employers made contact or were contacted, they were invited to schedule a period during which interested ERC employees could meet them and discuss employment. A suite of offices in one of the new buildings was used for that purpose, and provided many of the employees with their first opportunity to visit that new facility. Over 70 employers took advantage of the invitations and over 1100 interviews were held during the spring. The professional staff under study provided the majority of the interviewees, and 720 interviews were included in the data for this analysis. Of the 436 professionals, 244 participated in the interview program. The scheduled interviews were somewhat sensitive to salary range, with 62% of the employees in the less-than-$22,000 range participating, and only 35% of the higher paid employees contacting employers by this method.

The true value of the interview program is difficult to assess because of the number of employees who had received offers as a result of interviews but had not made employment

decisions during the period of the study. Employers who held interviews indicated that approximately 50 offers were made, while employees separating indicated only a fraction of that number, indicating that a number of offers were still outstanding.

The preparation of "mini-resumes" was mentioned previously. These short, one-paragraph employee descriptions were listed in the same three categories as the lists of employment opportunities. The lists were then mailed to organizations interested in hiring for positions in those areas. This effort resulted in requests for further information about 179 of the 271 employees who had filed for that type of assistance. A total of 393 requests were handled for the professional employees. These results only reflect the contacts made through the information center; employers were also informed that they could reach employees directly by mail and through the Center switchboard by telephone. As these requests were passed on to the employees for personal follow-up, tangible results of the procedure were only available if employees volunteered the information. The demand for further information is compared by job specialty and degree field in Chapter VIII.

The employees that had not filed interes statements were surveyed to encourage participation and determine what search techniques they were using. The same survey form (Appendix C) was used to question employees not participating

in the interview program. Results of these surveys are discussed in the next Chapter.

Members of the outplacement staff held counseling sessions with the majority of the Center staff. A typical meeting would be held in the employee's work area with from fifteen to thirty employees at a time. Short descriptions of the services available were given, and questions answered on all placement and separation procedures.

The final step in the placement program was a survey of employees made as they separated. Results of the survey were used to evaluate the programs and to provide suggestions to those employees still seeking employment.

CHAPTER VI

THE SEARCH FOR A JOB

The reaction of one employee to the December 29th meetin was immediate. He immediately went to the Personnel Office, located in the same building, and tendered his resignation, effective that afternoon. Most employees were not so well prepared for the announcement of closing and attrition grew slowly. At the end of the period under study, only 99 of the 436 professionals under study had been separated or had announced decisions regarding separations. Formal offers to join the staff of the new DOT organization taking over the facility had not been issued, but 211 of the employees had just received invitations to apply. Many of the 126 remaining employees had been delaying decisions pending these invitations from the DOT and it was expected that the decision rate would climb almost immediately. Because many employees had feared that offering information regarding job offers might impact their opportunities with the new organization, no attempt had been made to overtly gather this information. The majority of the discussion in this Chapter is based on data from job search activities and from those employees who had announced employment decisions prior to May 11, 1970.

Several investigatory areas will be discussed. The original survey questionnaire used in January to establish

employee preferences, and preference information from the resumes filed for the placement program are tabulated. Public and private interviewing and other methods used by employees to locate new employment will be surveyed. Finally, the results of exit interviews will be discussed.

The initial survey of employees was made by the questionnaire exhibited in Appendix A. This form was sent to over one hundred employees; thirty-five returns were received. Because of the length of the questionnaire and the poor response by employees, it was decided to gather most of the information desired from the employees as they left the Center. A second questionnaire (Appendix D) was used during the separation process and is discussed later in this chapter.

The first several questions in the initial questionnaire were designed to rate job search techniques. Table 6 shows the response from questions three through seven. The almost overwhelming preference for use of professional associates and friends is evident. This preference has also been noted in other studies of technical placement activity.[12] The high rating given the ERC listing service was thought to[13]

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[12] Leslie Fishman and others, "Reemployment Experiences of Defense Workers: A Statistical Analysis", U. S. Arms Control and Dev. Agency, ACDA/E-113, USGPO, December, 1968, pp. 24-27.

[13] Faltejan F. Feltman, "White and Blue Collars in a Mill Shutdown", ILR Paperback No. 6, Cornell University, April, 1968.

TABLE 6

RANKING OF JOB SEARCH TECHNIQUES - INITIAL QUESTIONNAIRE

Technique	Effectiveness Rating Best 1	2	3	4	5	Worst 6	Weighted Average	Rank	Techniques Used to Search Next Position	Present Position	Previous Position
Family	1	-	-	-	-	5	5.16	7	--	--	--
Friends	6	6	2	-	1	3	2.61	2	21	6	7
Professional Associates	15	3	6	-	-	-	1.61	1	25	18	13
Newspaper Advertisement	-	2	3	1	3	4	4.31	6	14	1	6
Magazine Advertisement	-	2	-	3	5	-	4.10	5	6	--	1
ERC Listing	3	9	5	-	-	4	2.86	3	23	--	--
Employment Agencies	3	3	5	1	1	3	3.00	4	10	1	4
Radio Commercial	-	-	-	2	3	4	5.22	8	--	--	--

reflect a desire of the employees to use the placement services provided by the Personnel Office and helped to support the expansion of that activity. At the time the initial questionnaire was distributed, only a few employees had been successful in finding new positions and it was believed that more valid responses regarding search techniques would be made upon successful completion of the search. A comparison of the results of the initial survey with the results of the separation questionnaire will be found later in this Chapter.

Response to Question 8 showed a majority of employees desiring to remain in the service of the federal government, with 68% responding in that area, more than half of that number indicating a desire to remain with the NASA. Most of the other responses indicated a preference for industrial positions, with electronics leading aerospace by a 20% margin. Education received as many responses as Aerospace industry, and, not surprisingly, there were no indications of a desire for military service.

A slight preference was shown for remaining in the aerospace field, with 45% desiring to stay, 35% desiring to leave, and 20% with no preference. Most of those desiring to stay in the field listed their interest or experience in aerospace, while those desiring to leave indicated that the lack of stability or the existance of higher priorities in other area was the motivating factor in their preference.

In their response to Question 10, employees showed a sensitivity to the shifting emphasis in public demands on the federal government. Over one-third of the responses were in the environmental area, including such fields as air and water pollution, environmental control, oceanography, and earth resources. A slightly smaller response was elicited for programs in the transportation area. Only three responses were tallied for the Department of Defense, surprising because of the closely related technical activity conducted in that Department.

Electronics and computers led the response to Question 11. Several listed aerospace and manufacturing, and one respondent desired a position as a stock broker. Most of the responses to the education question were in the teaching area, in college or vocational school.

Table 7 lists percentages for the yes and no questions beginning with number 13. It is evident that the respondents had a higher participation and interest in the ERC placement programs than the average, because even early in the program they had exceeded the participation averages existing at the end of the study.

Twenty percent of the respondents had lost previous jobs because of layoffs; almost half of them had been federal employees at the time. Only one response to the layoff question gave a notice period in excess of the six months

TABLE 7

RESPONSES TO INITIAL OUTPLACEMENT SURVEY

QUESTION		PERCENTAGE RESPONSE YES	NO
13.	Do you have access to:		
	a. ERC lists of interested employers?	97	3
	b. ERC interview schedules?	100	0
	c. ERC NEWS special editions?	100	0
	d. Adequate employment information?	82	18
14.	Do you know where the Personnel Office is?	97	3
15.	Do you know where the Interview Center is?	80	20
16.	Have you prepared your own resume?	87	13
17.	Have you submitted an Interest and Experience Statement?	81	19
18.	Have you submitted a NASA Outplacement Application?	61	39
19.	Is your Personal Qualification Statement updated for application to federal jobs?	63	37
20.	Do you prefer to:		
	a. Remain in this commuting area?	73	
	b. Remain in Massachusetts?	12	
	c. Remain in New England?	9	
	d. Move (outside of New England)	6	
21.	Have you lost a previous job because of a general layoff?	19	81
37.	Do you own your home?	63	37
38.	Do you have a college or university degree?	80	20

and that was for a three-year phaseout of another federal installation. All respondents were given time off for interviewing, but only one-third had had the benefit of in-plant interviews. Most of the respondents were given some severence pay and were paid for unused vacation.

The "Interest and Experience Statement" data on employee preferences is shown in Table 8. As stated before, only 62 percent of the professional employees submitted these resumes and thus showed less interest in the placement program than the average employee. With over 70% of the total Center complement completing these statements, it must be assumed that the professionals thought that the program had less to offer to them. The low submission percentage from the personnel of the Administration Directorate may have been due to the fact that this group was oriented more to the general support of the Center than to its technical mission and felt that employers would be looking for the technical specialties that gave the Center its name.

The high percentage of submissions from the Research group probably reflected the feeling that the association with the Center would be a good drawing card in their search for employment. Research employees also faced the highest probability of displacement because their specialties were less directly applicable to some of the plans under discussion for utilization of the Center's facilities.

TABLE 8

INTEREST AND EXPERIENCE STATEMENT SUBMISSIONS AND PREFERENCES

Response	Organizational Directorate A	D	P	R	T	Degree Science	Engin.	Other	Totals All	%
Number of Employees	43	5	93	165	130	214	206	16	436	-
Statements Submitted	20	2	57	119	73	143	120	8	271	-
Percent Submitting	47	40	61	72	62	67	58	50	62	
Type of Employment										
Federal Only	6	-	3	4	4	7	7	3	17	9
Federal Preferred	3	-	4	18	13	21	16	1	38	21
Total, Federal	9	-	7	22	17	28	23	4	55	30
Any Employment	17	2	52	118	79	145	117	6	168	91
Geography										
Boston Area Only	9	-	6	18	10	24	18	1	43	16
Boston Preferred	5	1	24	38	18	40	43	3	86	31
Total, Boston	14	1	30	56	28	64	61	4	129	47
New England Only	2	-	2	5	6	6	7	2	15	5
New England Preferred	2	1	7	10	11	20	11	-	31	11
Total, New England	4	1	9	15	17	26	18	2	46	16
Any Location	10	2	41	103	63	119	93	7	219	79

Employees were more loyal to their geographic situation than to their employer. Almost twice as many employees preferred jobs in the New England area as did upon jobs with the federal government. Both federal employment and local geographic preference were highest among the employees in Administration, reflecting the age and experience levels of these employees shown in Tables 4 and 5. These high levels may also have impacted the total submissions from this group, with employees preferring to conduct their own search on familiar ground.

The most professional organization, the Research Directorate, showed the least loyalty to geography, indicating that their specialization might require them to relocate, or, perhaps, that a job in their specialty was more important than its location. The researchers were also low in employer loyalty, only being exceeded by the Technical Programs organization which had a lower average of federal and NASA service.

Fifty-six percent of the professional employees were interviewed at the interview center set up by the Personnel Office. Data indicating the number of interviews per employee is shown in Table 9. Between 21 and 24 percent of the total had only one interview, with almost no trend evident by organization. The Advanced Technology group (T) fared somewhat better on an overall basis, with 60 percent of the group having at least one interview and a slightly higher

TABLE 9

NUMBER OF INTERVIEWS PER PROFESSIONAL IN THE FIVE ERC ORGANIZATIONS

Number of Interviews	Number and Percentage of Employees by Organization											
	# A	%	# D	%	# P	%	# R	%	# T	%	# All	%
1	10	23	-	-	22	24	37	22	27	21	96	22
2	5	12	-	-	10	11	21	13	20	16	56	13
3	1	2	1	20	4	4	14	8	8	6	28	6
4	2	5	-	-	5	5	6	4	8	6	21	5
5	-	-	-	-	2	2	3	2	3	2	8	2
6	1	2	-	-	3	3	6	4	2	2	12	3
7	1	2	-	-	-	-	-	-	3	2	4	1
8	-	-	-	-	1	1	-	-	1	1	2	-
9	1	2	-	-	1	1	1	1	3	2	6	1
10	1	2	-	-	2	2	-	-	1	1	4	1
More than 10	1	2	-	-	1	1	3	2	2	2	7	2
None	20	47	4	80	42	45	74	45	52	40	192	44
Total Interviews	74		3		150		255		238		720	
Interviews/Employee	1.72		1.33		1.61		1.55		1.76		1.65	

average number of interviews per employee. This slight trend may indicate a better job market for employees in the "T" group, but it is far from conclusive. Taken together with the interest expressed in Table 8, the trend indicates some disparity in favor of the "T" organization compared with the "R" group.

A more definite trend is observed when interview frequency is compared with salary. Table 10 shows peak activity at the $20,000 level with a sharp reduction above $24,000. This trend indicates either a dearth of opportunity for the higher-paid employees or a position related hesitancy of senior employees to apply for normal interviews. The latter is suspected to a certain extent, as a number of the senior personnel were observed to meet with the interviewers outside of the interview center. Age, related to salary, was probably a factor in the drop-out of senior people, although the second-highest average number of interviews was in the oldest organization (A). It should be noted that that group had the highest number of employees not interviewing at all, perhaps related to age and salary.

During the period of the study, questionnaires (Appendix C) were sent to employees who had not filed resumes or attended interviews at the Center. The questionnaires were meant to stimulate interest in the placement program as well as to determine what personnel placement efforts were being

TABLE 10

RELATION OF SALARY TO INTERVIEW FREQUENCY
AMONG ERC SCIENTISTS AND ENGINEERS

Salary	Number of Employees	Employees Interviewed	Percentage Interviewed	Number of Interviews	Average
$9-10,000	8	4	50	8	1.0
10-11,000	1	1	100	2	2.0
11-12,000	18	10	56	24	1.3
12-13,000	14	9	64	23	1.6
13-14,000	22	9	41	22	1.0
14-15,000	28	17	61	55	2.0
15-16,000	22	14	63	42	1.9
16-17,000	50	31	62	114	2.3
17-18,000	58	37	64	98	1.7
18-19,000	25	13	52	29	1.2
19-20,000	29	19	66	57	2.0
20-21,000	31	23	74	63	2.0
21-22,000	34	23	68	76	2.3
22-23,000	14	5	36	15	1.1
23-24,000	30	14	47	39	1.3
24-26,000	31	12	39	* 46	* 0.6
26-33,000	21	3	14	7	0.3
Totals	436	244	56	720	1.6

* One Employee had 27 Interviews, Not included in Average

made by the employees themselves, without the assistance of the placement program. Figure 2 shows the results of this survey. The employees who returned questionnaires and had resumes on file (Group 1) were arranging their own interviews at a rate of 2.84 per employee while attending ERC interviews at a very low rate of 0.72. The second group, who had not filed the Interest and Experience Statements, were arranging personal interviews at the same rate as the first group, while appearing at the interview center at an even lower frequency. Over seventy percent of these first groups indicated that they had been arranging their own interviews.

Group 3 presented a problem in analysis. Only 38 percent were participating in the placement program in any manner. It was discovered that this group included over one-third of the Center's supervisors, one-third of the employees with announced new positions, and 43 percent of the employees with salaries of $26,000 and above. These explanations for placement "drop-out" were adequate to alleviate fears that this was a group of hard-core unemployables.

The fourth group brought up the Center average for in-house interviews to the levels shown in Table 9. If it can be assumed that Groups 3 and 4 were as active as the first two groups in arranging personal interviews, the average number of interviews per professional employee would be more than twice the Table 9 values.

85 Questionnaires Returned	GROUP	1	54 Resumes on file	39 Arranged 153 Personal Interviews Interview Rate = 2.84 15 Attended 39 Interviews at ERC Intervies Rate = 0.72
	GROUP	2	31 Resumes not filed	22 Arranged 88 Personal Interviews Interview Rate = 2.84 8 Attended 18 Interviews at ERC Interview Rate = 0.58
134 Questionnaires Not Returned	GROUP	3	134 Resumes not filed	51 Attended 135 Interviews at ERC Interview Rate = 1.00
217 Not Questioned	GROUP	4	217 Resumes on file	170 Attended 536 Interviews at ERC Interview Rate = 2.48

Figure 2. Returns from Interview Questionnaire

Of the ninety-nine employees who had announced decisions at the end of the study, forty-seven had completed exit interview questionnaires (Appendix D). Table 11 presents the results of the questions on job search techniques which may be compared to data from the same questions asked early in the study. The ratings of techniques are ordered in the same prioritiy as in the first survey with the exception of assistance from family, which moved up in rank. The response to the interview program at ERC had not been included in the original questionnaire and was placed fourth in the second survey.

Almost three-fourths of the new positions were found with the help of friends and professional associates compared with expectations of less than fifty percent in the initial survey. A decline in responses is noted in all categories except the single family response. Newspaper and magazine advertisements show the greatest decline, either because of a general tightening of the job market or their replacement by the ERC services, which were somewhat more accessible. Response to the question regarding technique used to find a position at the ERC tally well with the initial responses, with a little higher weight being placed on friends. The response to this question is interesting, as appointment to civil service positions is competitive. It must be assumed that the response reflects lower formal recruiting expenditures by government.

A major change was noted in employee preference for employment in aerospace fields. Less than twenty percent of

TABLE 11

RANKING OF JOB SEARCH TECHNIQUES - FINAL QUESTIONNAIRE

Technique	EFFECTIVENESS RATING Best 1	2	3	4	5	Worst 6	Weighted Average	Rank	TECHNIQUES USED TO SEARCH New Position	ERC Position
Family	2	-	-	-	1	1	3.25	5	1	--
Friends	11	11	-	1	-	1	1.79	2	19	16
Professional Associates	17	7	6	-	-	-	1.63	1	20	15
Newspaper Advertisement	2	2	-	-	1	3	3.63	7	4	4
Magazine Advertisement	1	-	1	2	3	1	4.25	8	1	1
ERC Listing	-	5	3	2	-	-	2.70	3	3	-
ERC Interview	2	1	7	-	2	1	3.15	4	6	-
Employment Agencies	3	2	4	3	-	4	3.44	6	5	1
Radio Commercial	-	-	-	2	3	2	5.86	9	-	-

desired to remain in the field as they left the Center, compared with 45 percent earlier. 65 percent desired to leave the field, with the majority giving reasons of instability and insecurity as their reasons.

Thirty percent of the employees leaving took jobs outside of the New England Area, compared with the 79 percent that had stated that they would work anywhere in Table 8. There did not appear to be major difficulty finding jobs matching preferences to the local area from the results of these early returns. The time required to secure employment at a distance from one's home may change thes figures in the end result. Of course, all those employees retained in the new Center organization will be added to the local category.

Three-fourths of the employees thought that their new positions would be better than those they were leaving, while only 12 percent thought they would be worse. The fact that 70 percent of the respondents reported higher salaries, ranging from $100 to $4000 more than their ERC pay, probably had some impact on that judgement. Only 5 percent reported reduction in salary, but the validity of that response is in question, as many of the employees signed the questionnaire and may not have desired that information to be known by their peers at ERC.

CHAPTER VII

THE TRANSPORTATION SYSTEMS CENTER

The evolution of the Transportation Systems Center from the brightly glowing coals of the defunct space center will justify a detailed study in its own right. An attempt is made here to touch lightly on this evolution because of the impact it had on the employees of the ERC.

The great public furor over the closing of the ERC soon receded into a determined search for a new tenant for the facility under construction, with little mention of the utilization of the work force. Various local, state, and federal agencies were suggested for occupancy, with little regard for the specialized nature of the laboratories. The Department of Transportation was mentioned in press reports less than three weeks after the closing was announced.[14] The earliest ties to the new agency were the ongoing NASA projects in the area of air traffic control and navigation and guidance systems which could be considered within the realm of transportation research.

Before the end of January, The Department had appointed a committee to study the feasibility of using the Center

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[14]"NASA Cuts 50,000 Workers", Boston Herald Traveler, January 14, 1970

for a number of transportation projects.[15] Named to head the feasibility study was Undersecretary of Transportation James M. Beggs, who knew the ERC well. Less than a year earlier, Mr. Beggs had been responsible for the operation of the Center in his former position as Associate Administrator for Advanced Research and Technology with the NASA.

The report of the study group was presented to the Presidents Science Advisor, Dr. Lee DuBridge, whose advisory committee had been charged with the task of surveying all federal research and development programs for possible utilization of the facility. An affirmative report was given on the transportation proposals, and, on March 25, 1970, Secretary Volpe visited the Center and announced to the employees that a new development facility would come into being on July 1st and that he hoped that a majority of the employees could be retained.[16, 17]

The immediate reaction of the employees was very enthusiastic. Many had been delaying their search for, or acceptance of new jobs, and an aura of security settled over the Center. The organization and programs of the new transportation center were still to be established, and the number of employees to be retained was not known, but it

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[15]Drew F. Steis, "NASA Site OK'd as Transit Center", Boston Herald Traveler, January 23, 1970, p. 1.

[16]Arthur Stratton, "NASA Center, 600 Jobs Saved", Boston Herald Traveler, March 26, 1970, p. 1.

[17]A. S. Plotkin, "Cambridge Center Shifting Research to Transportation", The Boston Globe, March 26, 1970, p. 1.

was clear that a number of jobs had been "saved". It had become apparent by that time, however, that much of the advanced research conducted in the Research Directorat would not be supported by the transportation center, as the new goals lay closer to the application end of the R&D spectrum.

On May 7, 1970, the Department of Transportation mad the announcement that the new organization to be established on July 1st would have a staff of 425.[18] Letters which indicated whether or not they would be considered for employment in the new organization were mailed to all ERC employees who had not announced placement plans.

At the time of the staffing announcement, 99 of the 436 professionals under study had announced their plans. Of the remaining employees, 211 were invited to apply to the DOT for employment in the Transportation Systems Center (TSC). This left 126 professionals who would be seperated on June 30, whether or not they had found new positions.

The average annual salary of the group of employees selected for inclusion in the TSC was $17,995, or $170 less than that of the original complement of the ERC. Average age for the new organization was 37.5 years compared with the original 38.1 years. Experience was 14.5 years compared with 15.1 for the ERC professional profile.

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[18]Drew F. Steis, "186 Fired in Takeover of Cambridge NASA Site", Boston Herald Traveler, May 8, 1970,

Organizationally, the new Center will be similar to the that of the ERC, with three technical and one administrative divisions (Figure 3). The major difference is the removal of the Research Directorate in favor of a Transportation Systems Concepts Directorate. This new directorate had not been staffed at the completion of the study; thus the employees to be retained were placed in either the Systems Development Directorate, which replaced Technical Programs; or in the Technology Directorate, which had dropped the adjectival "Advanced" from its title. Table 12 shows the results of attrition upon the old organization and indicates the assignments of retained personnel to the new organization.

Over half of the employees not invited to be part of the new organization were from the research group. Those who were considered for retention were included in the technology area of the new organization with few exceptions. The large number of employees from the research organization who were not included in the new organization is a good indication the shift in emphasis toward the development areas in the transportation field. The NASA was supporting more activities in basic research fields with time horizons more distant than new transportation concepts require. A more comprehensive discussion of employees who had: 1) made job decisions, 2) been invited to join the TSC, and 3) not found new positions is included in the next chapter.

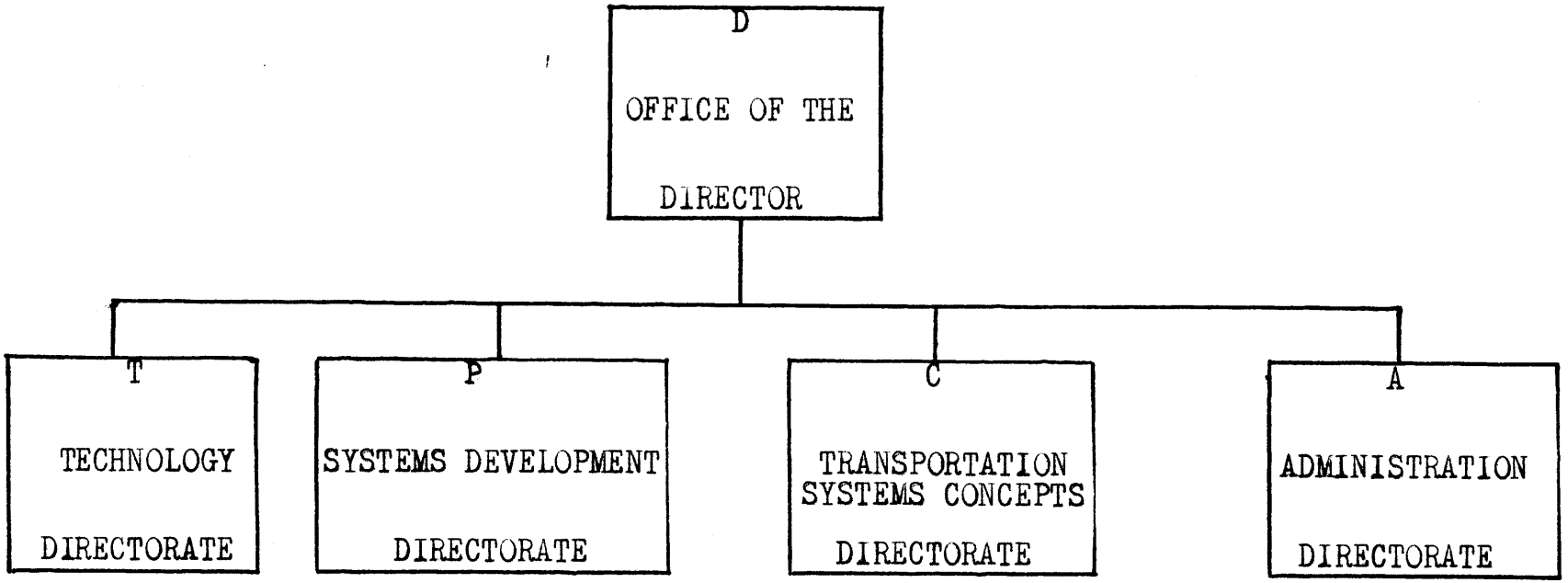

Figure 3. ORGANIZATION OF THE TRANSPORTATION SYSTEMS CENTER

TABLE 12

DISTRIBUTION OF ELECTRONICS RESEARCH CENTER PROFESSIONALS

ELECTRONICS RESEARCH CENTER DIRECTORATE	STATUS OF ELECTRONICS RESEARCH CENTER PERSONNEL							
	NUMBER OF EMPLOYEES	DECISIONS MADE	LOOKING FOR WORK	ASSIGNMENTS TO NEW ORGANIZATIONS				
				A	C	D	S	T
A	43	14	11	18	--	--	--	--
D	5	0	4	--	--	1	--	--
P	93	15	16	--	--	--	62	--
R	165	32	67	--	2	1	4	59
T	130	38	28	--	--	--	17	47
TOTAL	436	99	126	18	2	2	83	106

CHAPTER VIII

ANALYSIS OF PLACEMENTS

Three-hundred and ten of the four-hundred and thirty-six professionals studied were considered to be placed at the end of the study period. Table 13 gives a profile of the entire complement of professionals, broken down into three groups: 1) those who had announced position decisions outside of the Transportation Systems Center, 2) those who were invited to apply for employment in the new center, and 3) those who had not found work or had not announced their decisions.

The majority of the group with decisions made were going or had gone to positions in private industry. Engineers had a definite edge in the Bachelor's Degree category, even though all but one of the scientists had advanced degrees. The employees going to other jobs in the federal government were considerably lower in education, with only 52 percent holding advanced degrees, compared with 67 percent of the industry-bound employees.

Table 14 presents the sub-totals for the three groups in a percentage format. Two percentages are shown, the first is the percentage within the category of classification (for example, of the 99 employees with decisions made, 42% had Science, 51% had Engineering, 7% had other, and none had no Bachelor's Degree). The second percentage shows the percentage of each response falling in each of the placement areas.

TABLE 13

DISPLACEMENT OF ERC SCIENTISTS AND ENGINEERS

CATEGORY OF CLASSIFICATION	RESPONSE	JOB SEARCH DECISIONS MADE						DECISION SUB-TOTAL	DOT SUB-TOTAL	LOOKING SUB-TOTAL	TOTAL
		NASA	FEDERAL GOVERNMENT	INDUSTRY	UNIVERSITY	RETIREMENT	OTHER				
BACHELOR'S DEGREE	SCIENCE	6	5	21	3	3	4	42	104	68	214
	ENGINEERING	7	8	32	3	0	0	50	104	52	206
	OTHER	2	1	3	0	0	1	7	1	5	13
	NONE	0	0	0	0	0	0	0	2	1	3
ADVANCED DEGREE	SCIENCE	3	5	20	3	1	3	34	70	61	165
	ENGINEERING	2	4	18	1	1	0	26	61	29	116
	OTHER	1	0	0	0	0	0	1	3	2	6
	NONE	9	5	18	2	1	2	37	77	35	149
ADVANCED DEGREE LEVEL	MASTER'S	3	7	17	1	2	2	32	88	35	155
	DOCTORATE	3	2	21	3	0	1	30	46	56	132
	NONE	9	5	18	2	1	2	37	77	35	149
RESUME FILED	YES	9	7	26	4	3	1	50	136	85	271
	NO	6	7	30	2	0	4	49	75	41	165
STOPPER FILED	YES	11	10	21	3	1	1	47	105	71	223
	NO	4	4	35	3	2	4	52	106	55	213
TOTAL		15	14	56	6	3	5	99	211	126	436

TABLE 14

PERCENTAGE DISPLACEMENT OF ERC SCIENTISTS AND ENGINEERS

CATEGORY OF CLASSIFICATION	RESPONSE	DECIDED			DEPARTMENT OF TRANS.			LOOKING			TOTAL	PERCENT OF CATEGORY
		SUB-TOTAL	% CAT	% TOT	SUB-TOTAL	% CAT	% TOT	SUB-TOTAL	% CAT	% TOT		
BACHELOR'S DEGREE	SCIENCE	42	42	20	104	49	48	68	54	32	214	49
	ENGINEERING	50	51	25	104	49	50	52	41	25	206	47
	OTHER	7	7	54	1	1	8	5	4	38	13	3
	NONE	0	0	0	2	1	67	1	1	33	3	1
ADVANCED DEGREE	SCIENCE	34	34	21	70	33	42	61	48	37	165	38
	ENGINEERING	26	26	22	61	29	53	29	23	25	116	27
	OTHER	1	1	17	3	1	50	2	1	33	6	1
	NONE	37	38	25	77	37	52	35	28	23	149	34
ADVANCED DEGREE LEVEL	MASTER'S	32	32	21	88	42	57	35	28	22	155	36
	DOCTORATE	30	30	23	46	21	35	56	44	42	132	30
	NONE	37	38	25	77	37	52	35	28	23	149	34
RESUME FILED	YES	50	50	18	136	65	51	85	67	31	271	62
	NO	49	50	30	75	35	45	41	33	25	165	38
STOPPER FILED	YES	47	47	21	105	50	47	71	56	32	223	51
	NO	52	53	24	106	50	50	55	44	26	213	49
TOTAL		99	100	23	211	100	48	126	100	29	436	100

Forty-nine percent of the original ERC complement held Science baccalaureates, but after 71 percent of the employees had found new positions, 54 percent of the remainder were scientists. The situation was even worse for advanced degree holders; originally 38 percent of the complement held advanced degrees in the sciences, while 48 percent of those still looking held those degrees. As many of the scientists held doctorates, the trend against science is also reflected in the advanced degree level category, with 14 percent more of the seeking group holding doctorates than the original population.

A more comprehensive analysis of placement within the scientific, engineering, and other degree fields is presented in Table 15. Data from employer contact requests for information is also included in this table to reflect demand in each field. The first column of the table shows the number of employees holding bachelor's degrees in each of the fields. The second and third columns indicate the number of employees and the percentage of employees contacted through distribution of the "mini-resumes" to prospective employers. As a number of the resumes elicited more than one request, the next two columns indicate total demand for employees in each field.

The total demand, shown in column 5, in most cases reflects the actual placement percentages, making this technique of employer solicitation useful in prediction of

TABLE 15

DISTRIBUTION OF DEMAND AND PLACEMENT BY BACHELOR'S DEGREE

		NUMBER OF EMPLOYEES	CONTACT EMPL.		REQUESTS REQ.		DECIDED EMPL.		DOT REQUESTS		TOTAL PLACED	
			#	%	#	%	#	%	#	%	#	%
SCIENTISTS	Mathematics	52	21	40	52	100	14	27	34	65	48	92
	Physics	120	40	33	78	65	18	15	54	45	72	60
	Chemistry	32	16	50	29	91	7	22	10	31	17	53
	Astronomy	1	1	100	2	200	1	100	0	0	1	100
	Earth Sciences	2	1	50	3	150	0	0	2	100	2	100
	Biology	3	2	67	4	133	1	33	2	67	3	100
	Bio-Physics	1	1	100	3	300	0	0	1	100	1	100
	Psychology	3	1	33	2	67	1	33	1	33	2	67
ENGINEERS	Chemical	12	8	67	19	158	4	33	5	42	9	75
	Metalurgical	3	1	33	2	67	0	0	0	0	0	0
	Nuclear	1	0	0	0	0	0	0	1	100	1	100
	Electrical	92	40	43	99	108	22	24	51	55	73	79
	Electronic	29	14	47	39	134	5	17	16	55	21	72
	Aeronautical	24	8	33	16	67	8	33	10	42	18	75
	Mechanical	30	11	37	22	73	6	20	15	50	21	70
	Civil	5	3	60	4	80	2	40	1	20	3	60
	Marine	1	0	0	0	0	0	0	1	100	1	100
	Earth Sciences	9	4	44	6	67	3	33	4	44	7	78
OTHERS	Architecture	3	0	0	0	0	3	100	0	0	3	100
	Traffic Management	1	1	100	2	200	1	100	0	0	1	100
	BusinessAdministration	4	1	25	1	25	1	25	1	25	2	50
	Education	1	0	0	0	0	1	100	0	0	1	100
	Language	1	1	100	3	300	1	100	0	0	1	100
	History	3	1	33	1	33	0	0	0	0	0	0
	No Degree	3	3	100	6	200	0	0	2	67	2	67

placement trends. This technique is recommended as a fast and inexpensive means of spreading information about the qualifications of a work force that can also provide feedback on job market trends.

It is apparent from the table that personnel in the Chemistry field were having difficulty in placement on the basis that only 53 percent had been placed. Concern for the Chemists is alleviated somewhat, however, by the demands for information and the placements shown in the "decided column. Other fields with high demand percentages had fared better than the chemists, and it was felt that their problems were not as severe as the ones Physicists faced. Low demand and a low decision rate were somewhat buffered by the DOT requirements, but it is known that this was one of the more difficult placement fields at the time of the study.

On an overall basis, engineers fared better than scientists in placement. 72% of the engineers, against 67% of the scientists were placed at the end of the study.

The same type of information is presented by job classification in Table 16. From this table it is possible to observe the relative demand for specialists correlating with placements in the same manner as in the previous table. This table also gives a good comparison of the specialties required in the original ERC organization against those requested for the new DOT organization.

TABLE 16

DISTRIBUTION OF DEMAND AND PLACEMENT BY JOB CLASSIFICATION

TITLE	NUMBER OF EMPLOYEES	CONTACT EMPL. #	CONTACT EMPL. %	REQUESTS REQ. #	REQUESTS REQ. %	DECIDED EMPL. #	DECIDED EMPL. %	DOT REQUESTS #	DOT REQUESTS %	TOTAL PLACED #	TOTAL PLACED %
Flight Systems	4	1	25	1	25	2	50	1	25	3	75
Space Sciences	6	0	0	0	0	2	33	3	50	5	83
Aeronomy	1	0	0	0	0	1	100	0	0	1	100
Ionospheres	1	1	100	2	200	1	100	0	0	1	100
Fields and Particles	1	0	0	0	0	0	0	0	0	0	0
Meteoroid Studies	2	0	0	0	0	1	50	0	0	1	50
Solar Studies	1	0	0	0	0	1	100	0	0	1	100
Physiological Studies	4	3	75	5	125	2	50	0	0	2	50
Human Performance Studies	2	0	0	0	0	0	0	1	50	1	50
Manned Systems Engineering	1	1	100	1	100	1	100	0	0	1	100
Fluid & Flight Mechanics	2	1	50	2	100	0	0	2	100	2	100
Flight Mechanics	6	3	50	3	50	0	0	3	50	3	50
Control & Guidance Systems	47	19	40	31	66	9	20	27	57	36	77
Magnetofluidynamics	1	0	0	0	0	0	0	0	0	0	0
Basic Properties of Gases	2	1	50	2	100	0	0	0	0	0	0
Materials & Structures	2	0	0	0	0	0	0	1	50	1	50
Basic Properties of Materials	55	24	44	48	87	8	15	10	18	18	33
Aerospace Polymers	1	1	100	4	400	0	0	1	100	1	100
Electrical Propulsion & Power	2	1	50	1	50	1	50	1	50	2	100
Direct Energy Conversion	8	3	38	3	38	1	13	2	25	3	38
Flight Systems	3	2	67	3	100	0	0	2	67	2	67
Reliability	4	2	50	4	100	0	0	3	75	3	75
Flight Systems Test	1	0	0	0	0	0	0	0	0	0	0
Quality Assurance	2	1	50	3	150	0	0	2	100	2	100
Electrical Systems	8	5	63	22	275	5	63	3	37	8	100
Measurement & Instrumentation	47	15	32	31	66	10	21	28	60	38	81
Measurement & Inst. Systems	6	0	0	0	0	1	17	4	67	5	84

TABLE 16 (Continued)

DISTRIBUTION OF DEMAND AND PLACEMENT BY JOB CLASSIFICATION

TITLE	NUMBER OF EMPLOYEES	CONTACT EMPL. #	CONTACT EMPL. %	REQUESTS REQ. #	REQUESTS REQ. %	DECIDED EMPL. #	DECIDED EMPL. %	DOT REQUESTS #	DOT REQUESTS %	TOTAL PLACED #	TOTAL PLACED %
Space Optics	33	10	30	15	45	8	24	18	54	26	78
Measurement Standards & Calibration	1	0	0	0	0	0	0	0	0	0	0
Control Systems	17	8	47	11	65	2	12	7	41	9	53
Tracking & Telemetry Systems	7	3	43	6	86	0	0	6	86	6	86
Electronics Engineer	8	6	75	8	100	3	38	5	62	8	100
Telemetry Systems	1	1	100	3	300	0	0	1	100	1	100
Telecommunications	2	1	50	10	500	1	50	1	50	2	100
Electronics of Materials	11	4	36	5	45	3	27	3	27	6	54
Microwave Physics Electronics	23	6	26	15	65	3	13	19	83	22	96
Data Systems	36	16	45	61	170	13	36	20	56	33	92
Data Analysis	14	11	79	37	265	6	43	8	57	14	100
Theoretical Simulation Technology	6	1	17	2	33	0	0	5	83	5	83
Data Equipment	11	3	27	8	72	2	18	8	72	10	91
Experimental Facilities & Equipment	7	2	29	5	71	3	43	3	43	6	86
Experimental Tooling & Equipment	6	5	83	12	200	0	0	5	83	5	83
Director	1	0	0	0	0	0	0	1	100	1	100
Project Manager	3	1	33	1	33	1	33	0	0	1	33
Technical Management	10	3	30	4	40	2	20	3	30	5	50
Technology Utilization	1	0	0	0	0	0	0	0	0	0	0
General Engineer	1	1	100	2	200	1	100	0	0	1	100
Safety Engineer	1	0	0	0	0	0	0	0	0	0	0
Architect	2	0	0	0	0	2	100	0	0	2	100
Civil Engineer	4	4	100	5	125	1	25	0	0	1	25
Mechanical Engineer	7	7	100	13	186	1	14	4	57	5	71
Electrical Engineer	2	2	100	4	200	0	0	0	0	0	0
Industrial Engineer	1	0	0	0	0	1	100	0	0	1	100
Total	436	179	41	393	90	99	23	211	48	310	71

Other statistical information comparing the three groups of employees under discussion is shown in the following table:

TABLE 17

AGE, SALARY, EXPERIENCE, AND SUPERVISORY STATISTICS

Category	ERC	TSC	Decided	Looking
Number of Employees	436	211	99	126
Average Age	38.1	37.5	36.2	41.5
Average Salary	18,165	17,795	17,434	19,095
Average Experience	15.1	14.5	12.9	18.6
Supervisors	60	29	13	18

No surprising trends appear in the above tabulation. Age and wage are generally considered to be negative factors in placement efforts, and experience correlates directly with age.

CHAPTER IX

CONCLUSION

The results of this study indicate that the "Aerospace Technologist" is adaptable to other fields of endeavor. Almost three-quarters of the professional employees of the Electronics Research Center had secured employment or offers of employment six weeks before their final day of employment in the Space Agency. The majority of employees were to be employed in fields similar to those they had occupied at the Center, but with their direction focused on different goals. Almost one-half of the employees were to be employed in another federal organization, the Department of Transportation, where their expertise would be applied to near-term problem solving in the air traffic control area and to generation of new transportation developments and concepts. A second large group was dispersed to private industry, where their skills are to be applied to many areas, most of them not considered to be directly related to the space program.

The study indicates that engineers, generally working closer to development applications, had less trouble finding positions than research scientists. This may have been the result of a general reduction in spending on basic research by government and industry, but does not nullify the

conclusion that the hardware-oriented engineers have skills that can be applied to other-than-aerospace tasks.

Verification of the findings of other studies of technical placement was accomplished through surveys which showed that the technologists best friend is his professional associate when it comes to securing a new position.

Much of the studywas concerned with the operation of a placement service by the Personnel Office of the Center. Several conclusions result. A listing of employers with positions available was valued highly by the employees. This list was generated by a small number of employees not trained in placement work and produced as many or more employee contacts with prospective employers as the more costly procedure of providing interviews in the Center. Initial contacts were made by telephone, and files of more detailed information were kept in an information center.

Another successful project was the preparation of very short descriptions of each of the professional employees. These "mini-resumes" triggered much more response from prospective employers than the usual list of job classifications or educational and experience backgrounds. The complete set of resumes was sent to employers, and in many cases employees in fields other than those the employer had announced vacancies in were contacted, primarily on the suggestive nature of the resume. The availability of a switchboard that offered directory service and a centralized mail

distribution service made it easier for employers to contact job-seekers than individual mailings by the employees would have provided.

Employers were offered the assistance of the personnel office in contacting prospective employees. Through this service, the status of the job market could be surveyed by the number of responses in specialty areas.

While the results of this study may be of use in finding positions for other technical personnel displaced by changing social priorities, a further study is necessary to ascertain the results of the reallocation of these scientists and engineers from the space program. To this end, information regarding forwarding addresses and new positions will be secured from the majority of the employees so that they may be contacted regarding their success or failure in their new fields of endeavor at a later date. A digested version of the results of this study will be provided to those who participated in the data provision.

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RETURN TO: AP/R. T. O'NEIL, CHIEF OUTPLACEMENT PROGRAM

APPENDIX A

ERC OUTPLACEMENT SURVEY
(DO NOT SIGN THIS QUESTIONNAIRE)

1. TODAY'S DATE _____

2. HAVE YOU ACCEPTED A NEW POSITION YES:____ NO:____

3. WHAT SOURCES ARE/WERE USED IN SEEKING A NEW POSITION? CHECK THOSE USED.

A. FAMILY:	____	F. ERC LISTINGS:	____
B. FRIENDS:	____	G. EMPLOYMENT AGENCIES:	____
C. PROFESSIONAL ASSOCIATES:	____	H. RADIO COMMERCIALS:	____
D. NEWSPAPER ADVERTISEMENTS:	____	I. _____:	____
E. MAGAZINE ADVERTISEMENTS:	____	J. _____:	____

4. WHICH THREE OF THE ABOVE SOURCES ARE/WERE MOST EFFECTIVE

A. BEST: ____ B. 2D BEST: ____ C. 3D BEST: ____

5. WHICH THREE OF THE ABOVE SOURCES ARE/WERE LEAST EFFECTIVE:

A. WORST: ____ B. 2D WORST: ____ C. 3D WORST: ____

6. WHICH SOURCES WERE USED TO FIND YOUR POSITION AT ERC? _____

7. WHICH SOURCES WERE USED TO FIND PREVIOUS POSITIONS? _____

8. ARE YOU LOOKING FOR A POSITION IN:

A. NASA?	____	F. AEROSPACE INDUSTRY?	____
B. DOD?	____	G. ELECTRONICS INDUSTRY?	____
C. FEDERAL GOVERNMENT?	____	H. OTHER INDUSTRY?	____
D. OTHER GOVERNMENT?	____	I. MILITARY SERVICE?	____
E. EDUCATION?	____	J. _____	____

9. WHAT ARE YOUR FEELINGS REGARDING THE AEROSPACE FIELD?

A. PREFER TO STAY IN IT: ____

9. WHY? _____

B. PREFER TO LEAVE IT: ____

WHY? _____

10. WHAT OTHER GOVERNMENT PROGRAMS ARE YOU INTERESTED IN?

A. _____ B. _____

C. _____ D. _____

11. WHAT AREAS OF INDUSTRY ARE YOU INTERESTED IN?

A. _____ B. _____

C. _____ D. _____

12. WHAT AREAS OF EDUCATION ARE YOU INTERESTED IN?

A. _____ B. _____

13. DO YOU HAVE ACCESS TO:	YES	NO
A. ERC LISTS OF INTERESTED EMPLOYERS?	____	____
B. ERC INTERVIEW SCHEDULES?	____	____
C. ERC NEWS SPECIAL EDITIONS?	____	____
D. ADEQUATE EMPLOYMENT INFORMATION?	____	____
14. DO YOU KNOW WHERE THE PERSONNEL OFFICE IS?	____	____
15. DO YOU KNOW WHERE THE INTERVIEW CENTER IS?	____	____
16. HAVE YOU PREPARED YOUR OWN RESUME?	____	____
17. HAVE YOU SUBMITTED AN "INTEREST AND EXPERIENCE STATEMENT" (ANNOUNCEMENT 70-77)?	____	____

IF NOT, WHY NOT? _____

18. IS YOUR SF-171 (PERSONAL QUALIFICATION STATEMENT) UPDATED FOR APPLICATION TO FEDERAL JOBS?	____	____
19. HAVE YOU SUBMITTED A "NASA OUTPLACEMENT APPLICATION" (ANNOUNCEMENT 70-83)?	____	____

IF NOT, WHY NOT? _____

		YES	NO
20.	DO YOU PREFER TO:		
	A. REMAIN IN THIS COMMUTING AREA?	____	____
	B. REMAIN IN MASSACHUSETTS?	____	____
	C. REMAIN IN NEW ENGLAND?	____	____
	D. MOVE TO: (IN ORDER OF PREFERENCE) 1) _____	2) _____	
21.	HAVE YOU LOST A PREVIOUS JOB BECAUSE OF A GENERAL LAYOFF?	____	____

IF NO, PLEASE DISREGARD QUESTIONS 22 THROUGH 29.

22. HOW MANY PEOPLE WERE LAID OFF? ____

23.	WAS AN ENTIRE PLANT OR FACILITY CLOSED?	____	____
24.	DID THE EMPLOYER PROVIDE:		
	A. IN-PLANT INTERVIEWS?	____	____
	B. TIME OFF FOR INTERVIEWS?	____	____
	C. OPPORTUNITY FOR TRANSFER TO ANOTHER LOCATION?	____	____
	D. NO ASSISTANCE?	____	____
	E. OTHER ASSISTANCE?	____	____

PLEASE LIST: _____

_____

25. HOW MUCH NOTICE DID YOU RECEIVE? ____ WEEKS

26.	HAD YOU FOUND A NEW POSITION ON YOUR LAST DAY OF WORK?	____	____

27. HOW MUCH SEVERANCE PAY DID YOU RECEIVE?

A. NONE ____

B. 0-2 WEEKS SALARY: ____

C. 2-4 WEEKS SALARY: ____

D. 4-10 WEEKS SALARY: ____

E. ____ WEEKS SALARY:

28.	WERE YOU PAID FOR UNUSED VACATION?	____	____
29.	WERE YOU PAID FOR RETIREMENT CONTRIBUTIONS?	____	____

30. AGE: _____YEARS

31. SEX: _____

32. GRADE: GS-_____

33. NASA JOB CODE _____

34. HOW LONG HAVE YOU WORKED IN:

A. NASA?	____YEARS	F. AEROSPACE INDUSTRY?	____YEARS
B. DOD?	____YEARS	G. ELECTRONICS INDUSTRY?	____YEARS
C. FEDERAL GOVERNMENT?	____YEARS	H. OTHER INDUSTRY?	____YEARS
D. OTHER GOVERNMENT?	____YEARS	I. MILITARY SERVICE?	____YEARS
E. EDUCATION?	____YEARS	J. _____	____YEARS

35. HOW LONG HAVE YOU LIVED IN:

A. THIS COMMUTING AREA? ____YEARS

B. MASSACHUSETTS? ____YEARS

C. NEW ENGLAND? ____YEARS

D. UNITED STATES? ____YEARS

36. HOW MANY DEPENDENTS DO YOU HAVE? SPOUSE: ____ CHILDREN: ____ RELATIVES: ____

37. DO YOU OWN YOUR HOME: YES: ____ NO: ____

38. DO YOU HAVE A COLLEGE OR UNIVERSITY DEGREE? YES: ____ NO: ____

PLEASE LIST:	DEGREE	CURRICULUM	DATE
	_____	_____	_____
	_____	_____	_____

39. WHAT ADDITIONAL SERVICES WOULD YOU LIKE TO HAVE PROVIDED BY ERC?

_____

40. A. HAVE YOU INTERVIEWED AT THE ERC OUTPLACEMENT CENTER? YES ____ NO ____

B. HAVE YOU RECEIVED ANY OFFERS? YES ____ NO ____

41. A. HAVE YOU PERSONALLY ARRANGED ANY INTERVIEWS? YES____ NO ____

B. HAVE YOU RECEIVED ANY OFFERS? YES ____ NO ____

DO NOT SIGN THIS QUESTIONNAIRE

RETURN TO: AP/R.T. O'NEIL, CHIEF OUTPLACEMENT PROGRAM

APPENDIX B

INTEREST & EXPERIENCE STATEMENT

A. PERSONAL DATA

1. NAME _____

2. POSITION _____

3. SUPERVISOR'S NAME _____

4. SALARY _____

5. DEGREE(S) _____

6. TEL. _____

7. (A) Interested only in employment in Federal Government _____

   (B) Interested only in employment in Private Industry _____

   (C) Interested in any employment _____

8. (A) Will work only in Boston area _____

   (B) Will work only in _____

   (C) Will work anywhere _____

B. WORK INTERESTS

Brief description of areas of interest. (You may attach additional information such as a resume if you consider it helpful)

C. POSITIONS FOR WHICH QUALIFIED:

TITLE	NASA SERIES	GRADE(S)
(A)		
(B)		
(C)		

D. WORK HISTORY

Brief description of current duties. (You may attach your position description if appropriate.)

UNITED STATES GOVERNMENT

APPENDIX C

MEMORANDUM

TO:

Date:

FROM: AP/Chief, Outplacement Team

SUBJECT: ERC Outplacement Program

Records of the Outplacement Program indicate that you have: 1) Not filed an "Interest and Experience Statement" or resume ___; 2) Not signed up for interviews at the Interview Center ___.

Many prospective employers prefer to review the resumes on file in the personnel office prior to requesting interviews with ERC personnel. In addition, brief condensations of the resumes on file have been sent to over 200 employers in order that they may contact employees through the personnel office or directly.

The outplacement team is interested in providing maximum assistance to ERC employees. You are requested to answer the following questions so that we may better plan these services. Please return this memorandum to AP/R. T. O'Neil as soon as possible.

			YES	NO
1.	a)	Do you plan to submit an "Interest and Experience Statement"? (Announcement #70-77 dated January 6, 1970)	____	____
2.	a)	Have you registered for the NASA "Stopper List"? (Announcement #70-83, dated January 10, 1970)	____	____
	b)	If not, why not? _____		

MEMORANDUM
ERC Outplacement Program
Page 2

	YES	NO
3. Have you registered for the Civil Service Commission's "Displaced Employee Register?" (ERC News, January 23, 1970)	____	____
4. Have you prepared your own personal resume?	____	____
5. a) Have you arranged interviews yourself outside of the ERC Interview Center?	____	____
b) How many? ____		
6. a) Have you mailed copies of your personal resume to prospective employers?	____	____
b) How many? ____		
7. a) Have you received any offers of employment?	____	____
b) How many? ____		
8. Have you accepted a new position?	____	____

9. What suggestions do you have for improving the Outplacement Program?

_____

_____

_____

_____

R. T. O'Neil
Chief, Outplacement Team

APPENDIX D

ERC EXIT INTERVIEW QUESTIONNAIRE

1. TODAY'S DATE: _____

2. HAVE YOU ACCEPTED A NEW POSITION? YES: ____ NO: ____

3. DID YOU FIND A POSITION IN:

A. NASA:	____	F. AEROSPACE INDUSTRY:	____
B. DOD:	____	G. ELECTRONICS INDUSTRY:	____
C. FEDERAL GOVERNMENT:	____	H. OTHER INDUSTRY:	____
D. OTHER GOVERNMENT:	____	I. MILITARY SERVICE:	____
E. EDUCATION:	____	J. OTHER: _____	____

4. HOW LONG HAVE YOU WORKED IN:

A. NASA:	____	F. AEROSPACE INDUSTRY:	____
B. DOD:	____	G. ELECTRONICS INDUSTRY:	____
C. FEDERAL GOVERNMENT:	____	H. OTHER INDUSTRY:	____
D. OTHER GOVERNMENT:	____	I. MILITARY SERVICE:	____
E. EDUCATION:	____	J. OTHER: _____	____

5. DO YOU THINK YOUR NEW POSITION WILL BE:

A. BETTER THAN AT ERC: ____ B. WORSE THAN AT ERC: ____

C. WHY? _____

6. (OPTIONAL) DOES YOUR NEW POSITION PAY A SALARY:

A. HIGHER: ____ B. THE SAME: ____ C. LESS: ____ THAN AT ERC

D. HOW MUCH DIFFERENCE $ _____/YEAR

7. WHAT SOURCES WERE USED IN SEEKING A NEW POSITION? (CHECK)

A. FAMILY:	____	F. ERC LISTINGS:	____
B. FRIENDS:	____	G. ERC INTERVIEWS:	____
C. PROFESSIONAL ASSOCIATES:	____	H. EMPLOYMENT AGENCIES:	____
D. NEWSPAPER ADVERTISEMENTS	____	I. RADIO COMMERCIALS	____
E. MAGAZINE ADVERTISEMENTS	____	J. OTHER: _____	____

8. WHICH SOURCES IN QUESTION 7 WERE USED TO FIND YOUR NEW POSITION? _____

9. WHICH SOURCES IN QUESTION 7 WERE USED TO FIND YOUR PREVIOUS POSITION AT ERC? _____

10. WHICH THREE OF THE ABOVE SOURCES IN QUESTION 7 ARE/WERE MOST EFFECTIVE?

A. BEST: ____ B. 2D BEST: ____ C. 3D BEST ____

11. WHICH THREE OF THE ABOVE SOURCES IN QUESTION 7 WERE/ARE LEAST EFFECTIVE?

A. WORST: ____ B. 2D WORST: ____ C. 3D WORST ____

12. WHAT ARE YOUR FEELINGS REGARDING THE AEROSPACE FIELD?

A. PREFER TO STAY IN IT: ____ B. PREFER TO LEAVE IT: ____

C. WHY? _____

13. IN WHAT OTHER GOVERNMENT AGENCIES DID YOU LOOK FOR A POSITION?

A. _____ B. _____

C. _____ D. _____

14. IN WHAT AREAS OF INDUSTRY DID YOU LOOK FOR A POSITION?

A. _____ B. _____

C. _____ D. _____

15. IN WHAT AREAS OF EDUCATION DID YOU LOOK FOR A POSITION?

A. _____ B. _____

16. DID YOU HAVE ACCESS TO:

	YES:	NO:
A. ERC LISTS OF INTERESTED EMPLOYERS?	____	____
B. ERC INTERVIEW SCHEDULES?	____	____
C. ERC NEWS SPECIAL EDITIONS?	____	____
D. ADEQUATE EMPLOYMENT INFORMATION?	____	____

17. HOW LONG HAVE YOU LIVED IN:

A. THIS COMMUTING AREA? ____ YEARS

B. MASSACHUSETTS? ____ YEARS

C. NEW ENGLAND? ____ YEARS

D. UNITED STATES? ____ YEARS

18. IS YOUR NEW POSITION:

A. IN THIS COMMUTING AREA: ____

B. IN MASSACHUSETTS? ____

C. IN NEW ENGLAND? ____

D. WHERE: _____ ____

19. HOW MANY DEPENDENTS DO YOU HAVE? SPOUSE: ____ CHILDREN: ____ RELATIVES: ____

20. DO YOU OWN YOUR HOME: YES: ____ NO: ____

21. DO YOU HAVE A COLLEGE OR UNIVERSITY DEGREE: YES: ____ NO: ____

DEGREE	DATE	CURRICULUM	DEGREE	DATE	CURRICULUM

22. A. DID YOU INTERVIEW AT THE ERC OUTPLACEMENT CENTER? YES: ____ NO: ____

B. DID YOU RECEIVE ANY OFFERS? ____ ____

23. A. DID YOU PERSONALLY ARRANGE ANY INTERVIEWS? ____ ____

B. DID YOU RECEIVE ANY OFFERS: ____ ____

24. WHAT ADDITIONAL SERVICES WOULD LIKED TO HAVE HAD PROVIDED BY ERC?

_____

25. WOULD YOU LIKE TO SEE THE RESULTS OF THIS SURVEY WHEN THE ERC PHASEOUT IS COMPLETE? YES: ____ NO: ____

26. NAME: _____ 27. AGE: _____ 28. SEX: _____

29. ERC GRADE: GS-_____ 30. NASA-ERC JOB CODE: _____

	COMPANY	CONTACT	POSITIONS AVAILABLE
60.	AMERICAN INST. OF PHYSICS 335 EAST 45 ST. N.Y., N.Y. 10017	SUBMIT RESUME TO THE PLACEMENT SERVICE	ACADEMIC OPENINGS (UNITED STATES, CANADA, AUSTRALIA)
61.	EGG&G CROSBY DRIVE BEDFORD, MA	LARRY ASBURY	COMPUTER OPERATORS (SHIFTS) DATA DISTRIBUTION CLERK " ASSEMBLY LANGUAGE PROGRAMMER (DDP 516)
62.	FAIRCHILD R&D CENTER 4001 MIRANDA AVE. PALO ALTO, CALIF.	JOHN ARTHUR (408) 321-7250	SENIOR ENGINEER
63.	FAIRCHILD R&D CENTER 2513 CHARLSTON RD MOUNTAINVIEW, CALIF. 94040	WILLIAM HARE (415)(961-1028)	MANAGER OF III-V WAFER PROCESSING MFG DEPT.
64.	MIT LINCOLN LABORATORY BOX 73 LEXINGTON, MA 02173	RICHARD KILSON 862-5500, X7304	TECHNICIANS (MICROWAVE) ENGINEERING ASST.
65.	NAVAL ELEC. LAB CTR[L] 271 CATALINA BLVD. SAN DIEGO, CAL. 92152	SUBMIT SF 171 TO PERSONNEL OFFICE (CODE 123) IDENTIFY VACANCY AND INCLUDE HOME ADDRESS WITH ZIP CODE.	SEE SEPARATE LISTINGS FROM NELC DATED 2/13/70, 2/19/70, 3/4/70, AND 3/11/70, POSTED ON BULLETIN BOARDS.
66.	NORTHEASTERN UNIVERSITY[M] ELECTRICAL ENGRG DEPT. 360 HUNTINGTON AVE. BOSTON, MA	DR. NOWAK 437-2971	FACULTY POSITION - ASSOCIATE OR ASST. PROF. (PH.D REQUIRED)
67.	TEKTRONIX, INC. 400 TOTTEN POND RD. WALTHAM, MA 02154	DON SEELYE 894-4667, -8	PRODUCT SERVICE TECH. FIELD ENGINEER

	COMPANY	CONTACT	POSITIONS AVAILABLE
68.	VISION SYSTEMS, INC. 42 NORTH RD. BEDFORD, MA	JON MEADS 275-8700	PROGRAMMER ANALYST (SMALL COMPUTERS) INTERACTIVE GRAPHICS
		UNITED STATES GOVERNMENT	
69.	NAVAL SHIP MISSILE SYSTEMS[N] PORT HUENEME, CAL. 93041	SUBMIT SF 171 TO CIVILIAN PERSONNEL OFFICE (CODE 121)	ELECTR. ENGR. (ELECTRO-MAG) GS-13/14(06/N-23/70) ELECTR. ENGR (DATA PROC.) GS-12 (#06/N-24/70) GEN. ENGR, GS-13(06/N-25/70)

L - SEE ALSO SUPPLEMENT 6, No. 48
M - " " BASIC LIST, No. 125
N - " " " " , No. 204

APPENDIX F

DATE OF CALL _____

FOR: INTERVIEWS _____

LISTING _____

BOTH _____

OUTPLACEMENT TELEPHONE CONTACT

1. ORGANIZATION

   A. NAME OF ORGANIZATION _____

   B. DIVISION _____ C. BRANCH _____

   D. ADDRESS _____

   E. PRODUCTS _____ F. EMPL. AGENCY _____

   G. NAME OF CONTACT(S) _____ H. TELEPHONE _____

2. POSITIONS OPEN

A. TITLE	B. QUAL REQUIRED	C. NO. POS.	D. SALARY

3. LISTING

   A. OPEN INTERVIEWING ____ DATE(S) _____

   B. CLOSED INTERVIEWING ____ DATE(S) _____

      1) LIST OF EMPLOYEES ATTACHED ____ TO BE SUPPLIED ____

      2) REVIEW OF RESUMES BEFORE SCHEDULING ____ DATE _____

   C. PUBLICATION ON LISTS ONLY ____

4. INTERVIEWS

A. INTERVIEWERS NAME	B. SPECIALTY PERSONNEL	B. SPECIALTY TECHNICAL	C. WHICH POSITIONS	D. GENERAL COVERAGE
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

E. NUMBER OF INTERVIEWS POSSIBLE _____ F. EXTRA INTERVIEWERS _____

G. STARTING TIME 9:30 ____ OR ____ H. STOPPING TIME 4:30 ____ OR ____

I. SPECIAL TIME REQUIREMENTS _____